

REMARKS

Claims 1 – 8 and 17 – 21 are now pending in the application. Minor amendments have been made to the claims to simply overcome the objections to the claims. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

SPECIFICATION OBJECTIONS

The Examiner has objected to the specification for failing to provide proper antecedent basis for the claimed subject-matter. This objection is respectfully traversed.

The Examiner has asserted that the specification does not teach nullifying blocks of control signal pulses such that each successive block of nulled pulses has less number of nulled pulses than the block that immediately precedes the succeeding block.

Applicant respectfully notes that the specification does teach nullifying blocks of control signal pulses such that each successive block of nulled pulses has less number of nulled pulses than the block that immediately precedes the succeeding block. More specifically, the specification states that “The method further includes nulling blocks of control signal pulses ..., wherein successive blocks have less or equal number of nulled pulses than the preceding block.” (see Par. [0004], lines 9 – 12). The specification provides further support stating that “...the number of pulses in each consecutive block of nulled pulses is progressively decreased”. (see Par. [0050], lines 6 – 8). Therefore, Applicant respectfully requests reconsideration and withdrawal of this objection.

The Examiner has further asserted that the specification does not disclose executing the step of nulling blocks of control signal pulses having at least one nulled pulse per block, such that each successive block of nulled pulses has an equal or less number of nulled pulses than the block that immediately precedes the succeeding block over a second half of the dithering period.

Applicant respectfully notes that the specification does teach executing the step of nulling blocks of control signal pulses having at least one nulled pulse per block, such that each successive block of nulled pulses has an equal or less number of nulled pulses than the block that immediately precedes the succeeding block over a second half of the dithering period.

More specifically, the specification specifically states that “[t]he method further includes nulling blocks of control signal pulses over a second half of the dithering period, wherein successive blocks have less or an equal number of nulled pulses than the preceding block.” (see Par. [0004]). Further, the specification describes that the dithered control signal is generated by first progressively increasing the number of nulled pulses in each succeeding block of nulled pulses over one half the period of the dithering signal (e.g., 62.5 ms out of a 125 ms period). The scheme is then reversed, and the number of nulled pulses in each consecutive block of nulled pulses is progressively decreased in a manner that mirrors the scheme utilized during the first half of the dithered control signal period. (see Par. [0050] and Figure 8). Therefore, Applicant respectfully requests reconsideration and withdrawal of this objection.

CLAIM OBJECTIONS

Claim 10 is objected to because claim 10 include the phrase “variables a time and a period as variables”. Applicant notes that Claim 10 has been cancelled herein. Therefore, the objection has been rendered moot.

REJECTION UNDER 35 U.S.C. § 101

Claims 1 – 16 stand rejected under 35 U.S.C. §101 because the claimed invention is directed toward non-statutory subject-matter. This rejection is respectfully traversed.

At the outset, Applicant notes that claims 9 – 16 have been cancelled herein, without prejudice or disclaimer of the subject-matter contained therein. Therefore, the rejection of claims 1 – 16 has been rendered moot.

Claim 1 has been amended herein to include a method of regulating engagement of a torque transfer device based on a dithered control signal. Applicant notes that claim 1, as amended, results in a tangible, useful application. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 1 – 8 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. This rejection is respectfully traversed.

The Examiner has asserted that the phrase “having at least one nulled pulse per block” is ambiguous. The Examiner has noted that it is unclear whether the original signal

should have at least one nulled pulse per block or only after the nulling procedure that the control signal pulses should have at least one nulled pulse per block.

Claim 1 has been amended herein to include nulling blocks of pulses of the digital control signal having at least one nulled pulse per block. The amended language of claim 1 clearly indicates that blocks of pulses of the digital control signal (i.e., the original signal) are nulled and that each of the nulled blocks includes at least one nulled pulse. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

REJECTION UNDER 35 U.S.C. § 103

Claims 1 – 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Green et al. (U.S. Pat. App. No. 2003/0058506) in view of Levine (U.S. Pat. App. No. 2002/0016653). This rejection is respectfully traversed.

Claim 1 includes nulling blocks of pulses of the digital control signal having at least one nulled pulse per block, such that each successive block of nulled pulses has at least the same number of nulled pulses as the block that immediately precedes the succeeding block and nulling blocks of the digital control signal having at least one nulled pulse per block, such that each successive block of nulled pulses has an equal or less number of nulled pulses than the block that immediately precedes the succeeding block.

Green et al. fails to teach or suggest nulling blocks of pulses of the digital control signal having at least one nulled pulse per block, such that each successive block of nulled pulses has at least the same number of nulled pulses as the block that

immediately precedes the succeeding block and nulling blocks of the digital control signal having at least one nulled pulse per block, such that each successive block of nulled pulses has an equal or less number of nulled pulses than the block that immediately precedes the succeeding block.

More specifically, Green et al. discloses a signaling system to transmit data to a moving vehicle. The signaling system includes a modulator unit 27 that modulates an incident optical beam and that directs the modulated optical beam back along its path of incidence (see Par. [0036], lines 6 – 14). The modulator unit 27 selectively prohibits transfer of a laser beam to a terminal 19 (i.e., by selectively absorbing the laser beam in an intrinsic layer 81-2) based on a DC bias voltage (see Par. [0045] to Par. [0046]). Figure 5 illustrates modulation of the laser beam based on the DC bias voltage. The graph of Figure 5 merely illustrates instances when the laser beam is allowed to pass to the terminal 19 (i.e., $V = 1$) and instances where the laser beam is prohibited from passing to the terminal 19 (i.e., $V = 0$). Therefore, Green et al. fails to teach or suggest nullifying blocks of pulses of a digital control signal.

Levine fails to cure the deficient teachings of Green et al. More specifically, Levine discloses a vehicle drive override subsystem that over-rides manual control of vehicles and provides limited automatic control in response to sensor input. Levine is completely silent as to digital control signals and nullifying blocks of pulses of digital control signals. Therefore, Levine fails to cure the deficient teachings of Green et al.

In view of the foregoing, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 2 – 8 ultimately depend from claim 1, which defines over the prior art, as discussed in detail above. Therefore, claims 2 – 8 also define over the prior art for at least the reasons discussed with respect to claim 1. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Claims 17 – 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dominke et al. (WO 02/32742) in view of Ichimaru (U.S. Pat. No. 5,924,703). This rejection is respectfully traversed.

Claim 17 includes generating a digital control signal having multiple pulses, modifying the digital control signal by nulling blocks of control signal pulses consisting of at least one nulled pulsed per block to produce a dithered control signal and varying the output force generated by an actuator assembly in response to the dithered control signal. Dominke et al. fails to teach or suggest generating a digital control signal having multiple pulses, modifying the digital control signal by nulling blocks of control signal pulses consisting of at least one nulled pulsed per block to produce a dithered control signal and varying the output force generated by an actuator assembly in response to the dithered control signal.

Ichimaru fails to cure the deficient teachings of Dominke et al.. More specifically, Ichimaru fails to teach or suggest modifying the digital control signal by nulling blocks of control signal pulses consisting of at least one nulled pulsed per block to produce a dithered control signal. Ichimaru discloses determining an applied current (i.e., a resultant signal) based on a command current and a dithering current. An amplitude D and frequency (f_0) of the dithering current are determined based on the command current (Col. 4, Lines 34 – 44). Ichimaru does not disclose nullifying pulses of the

command current. Therefore, Ichimaru fails to teach or suggest the present invention as claimed and reconsideration and withdrawal of the rejections are respectfully requested.

With regard to claims 18 – 21, Applicant notes that each is either directly or indirectly dependent on claim 17, which defines over the prior art as discussed in detail above. Therefore, claims 18 – 21 also define over the prior art for at least the reasons stated with respect to claim 17 and reconsideration and withdrawal of the rejections are respectfully requested.

ALLOWABLE SUBJECT MATTER

The Examiner has indicated that claims 9 – 16 would be allowable if the statutory double patenting rejection and the 35 U.S.C. §101 rejection are overcome. Claims 9 – 16 have been cancelled herein without prejudice or disclaimer of the subject-matter contained therein.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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